

# **Water Resources Conservation Advisory Council Report Responsibilities**

## **Section 32803 of NREPA**

**12 February 2009**

### **Introduction**

The Water Resources Conservation Advisory Council (Council) is pleased to provide this update to the Legislature on issues that we have been assessing since we began this round of work in September 2008. While we are still in the initial stages of our analysis of the issues that the Legislature put before us, we believe we have made considerable progress in some areas, while laying the necessary groundwork for issues that require additional attention.

We have broken the work down among several subcommittees of the Council. The work of the subcommittees is presented below in relation to the specific charges to the Council.

We were required to issue a Progress Report by February 8, 2009 and final report by August 9, 2009 as required under MCLA 324.32803(4). This February 2009 interim report follows the Council's early January 2009 report regarding capacity and use of withdrawals that can be found at the council website [www.michigan.gov/wrcac](http://www.michigan.gov/wrcac) at [http://www.michigan.gov/documents/dnr/Capacity\\_Use\\_Report\\_Final\\_1\\_7\\_09\\_262714\\_7.pdf](http://www.michigan.gov/documents/dnr/Capacity_Use_Report_Final_1_7_09_262714_7.pdf).

### **Applicable Issues and Actions**

#### **I. MCLA 324.32803(4)(c) - Study and make recommendations regarding the development and refinement of the assessment tool .**

Our charge was to conduct testing and evaluate the operation and the accuracy of the Water Withdrawal Assessment Screening Tool, including implications of section 32706e (phase-in provision), submitting a report that contains the results of its testing and evaluation and any recommendations that the council has to improve the operation of the Screening Tool. We plan to provide a full report to the legislature by April 9, 2009. We have organized our task according to the headings below and herein report progress to date.

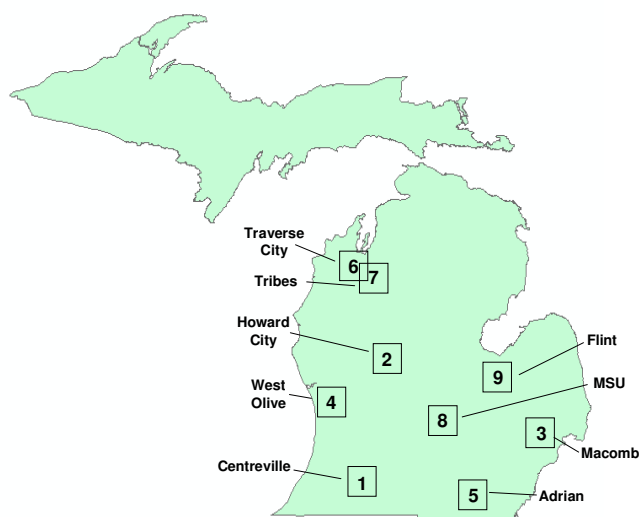
Documentation of component mathematical models used in the Screening Tool: Peer-reviewed technical reports have been published for each of the three component models of the Screening Tool: the streamflow model (Hamilton et al. 2008), the groundwater drawdown model (Reeves et al. 2008), and the fish response model (Zorn et al. 2008). These reports document the methods used in building the models and evaluate model assumptions and predictive accuracy where possible.

Review and status of the rivers classification mapping framework: An initial description of the rivers classification mapping framework is included in the completed fish modeling technical report (Zorn et al. 2008); and a full description is being prepared as another technical report. We reviewed the processes of delineating ecological river segments and classifying ecological river types, and the final DNR fisheries classification map. We likewise reviewed the draft The Water Withdrawal Assessment Process (WWAP) maps that resulted from application of minimum

drainage area in the 2008 law (MCL 324.32706A). The final WWAP maps are expected very soon. We will review these once more when they are available.

Initial internet use of screening tool, including feedback from users: From its inception on October 1 until December 31, 2008, about 1,100 unique visits were made to the Water Withdrawal Assessment Tool internet site. This is about 370 per month. About 30% of these were return visits. During this period 28 comments were entered on the site. The vast majority of these were insightful and constructive comments related to the actual workings of the site interface. The DEQ and its technical advisory committee have provided written responses to each comment on the internet site and are including comments and suggestions in their development process.

Conducting a series of workshops on use of the screening tool: We have encouraged and supported a series of educational, hands-on workshops covering the Water Withdrawal Assessment Process and the use of the component Screening Tool. We are striving to reach the full range of water use interests and also to achieve broad geographical coverage across the more populated southern portion of the state. Nine workshops have been arranged through MSU Extension and the MSU Institute for Water Research; these will be completed prior to our final report in April. These workshops provide hands-on experience with the internet Screening Tool and also an opportunity to gather structured feedback from participants via a standard questionnaire. Summary information from the first 3 workshops includes: about 30-40 persons per workshop; good range of water use interests present; and collected about 20 questionnaires per workshop. Various council members also have given presentations to their constituents and have sometimes distributed the standard questionnaire, so we hope to gather some additional feedback in this manner. Through workshops and presentations combined we hope to directly educate approximately 400 persons about the Screening Tool, and we should collect standardized feedback from about 200 persons.



**Figure 1.** Locations and dates of Screening Tool educational workshops led by MSU Extension.

Feedback from the workshops: To date we have summarized standard feedback from 60 persons, representing about a dozen different water use interests. Feedback results will be fully summarized, with help from MSU staff, for the April report. Briefly, feedback has been quite positive regarding both the purpose and operation of the Screening Tool. Many constructive, detailed suggestions regarding the website operation were provided.

Testing screening tool response using statewide array of test wells: We have begun several analyses of sets of test wells to evaluate the “big picture” of how the Screening Tool will work when applied as a standard policy instrument across the entire state. One set includes 10 wells randomly placed within each of 80 counties; this provides a geographically distributed test. The other set includes the 500 wells actually drilled during the past 3 years; this provides a realistic test. These tests will be concluded in April 2009.

Comparing screening tool response with DEQ site level review for selected well proposals: This will be covered in the April report.

Status of DEQ water accounting database system: This will be covered in the April report.

Implications of phase-in provision: This will be covered in the April report.

Literature sources cited are available at [www.michigan.gov/wrcac](http://www.michigan.gov/wrcac)

Hamilton, D. A., R. C. Sorrell, and D. J. Holtschlag. 2008. A regression model for computing index flows describing the median flow for the lowest summer flow month in Michigan. U.S. Geological Survey, Scientific Investigations Report 2008-5096, Reston, Virginia.

Reeves, H.W., D. A. Hamilton, P. W. Seelbach, and A. J. Asher. 2008. Ground-Water Component of the Michigan Water Withdrawal Screening Tool: U.S. Geological Survey Scientific Investigations Report. - In Press.

Zorn, T.G., P.W. Seelbach, E.S. Rutherford, T.C. Wills, S. Cheng, and M.J. Wiley. 2008. A regional-scale habitat suitability model to assess the effects of flow reduction on fish assemblages in Michigan streams. Michigan Department of Natural Resources, Fisheries Research Report 2089, Ann Arbor.

## **II. MCLA 324.32803(4)(d) - Study and make recommendations on whether and how the definition of adverse resource impact in section 32701 should be modified to more specifically address potential impacts to the Great Lakes, inland lakes, and other aquatic systems due to large quantity withdrawals.**

The Water Withdrawal Assessment Process (WWAP) established in 2008 state law subdivided the state into several thousand ‘hydrologic catchments’ or drainage areas and assigned an estimated summer dry-period water budget to each. The goal of the law is to prevent adverse individual or cumulative resource impact to the aquatic systems within each of these catchments. The WWAP accounts for the reductions to these water budgets at the stream or river that drains out of each hydrologic catchment and uses stream flow and stream fish assemblages in the assessment of adverse impact. The WWAP, in managing the outlet stream flow, also manages overall flow in the entire catchment water budget. Consequently, one could assume that it is providing some level of protection to the hydrologic regime of the other water bodies (e.g., inland lakes and wetlands) contained therein. A subcommittee has been established to

investigate whether the 2008 WWAP model indeed provides adequate hydrologic protection for Michigan's inland lakes and wetlands, or whether some additional, more focused process is needed.

The council is specifically charged with “*studying and making recommendations on whether and how the definition of adverse resource impacts in section 32701 should be modified to more specifically address potential impacts to the Great Lakes, inland lakes, and other aquatic ecosystems due to large quantity withdrawals.*” The goal of the subcommittee is to frame the issues surrounding this charge and make progress to address following for the August 9, 2009 report:

- A thorough review of the scientific literature of the importance of groundwater inputs to lakes and wetlands
- A thorough review of the scientific literature to identify candidate indicators for measuring adverse resource impact in inland lakes and wetlands (possibly including biological, chemical and physical indicators)
- A compilation of pertinent existing data available on inland lakes and wetlands in Michigan
- An outline of the research needs, if necessary, to address this issue.

Progress to date and decisions that the subcommittee has agreed on:

1. We will consider impacts from water withdrawals on inland lakes and wetlands (defined as ‘other aquatic ecosystems’), although exactly which wetlands to be considered is still under discussion (i.e. whether we consider all wetlands or specific sensitive types, like bogs and fens for example). We believe that we can adequately address the above issues (a-d) related to these types of aquatic systems by the August, 2009 report deadline, but will be unable to address these issues (a-d) related to the entirety of the Great Lakes within this timeframe.
2. We have generally agreed that fish are not the likely, appropriate indicator for assessing adverse resource impacts in either inland lakes or in wetlands and so we need to identify other more appropriate indicators of adverse resource impact.
3. We have identified two important types of change within lakes and wetlands in response to water withdrawals that we will consider:
  - a. The change in the water level (i.e. water surface area) of the water body. We will evaluate this both directly as a function of the surface level and in relation to the areal extent of the lake or wetland related to the depth and extent of shallow water.
  - b. The change in the percent contribution of groundwater entering the water body. As we learned from the groundwater modeling, a removal of groundwater can affect the amount of groundwater flowing into a stream. Analogously, removal

of groundwater could affect the amount of groundwater entering a nearby lake or wetland. A change in groundwater inflow could also precipitate changes in the receiving system in temperature (say for a small lake system with a large groundwater inflow) or in lake or wetland chemistry if an important flow of calcium or some other groundwater constituent was reduced.

4. Given the large number of lake and wetland types that exist across the Michigan landscape, a classification system, or a way to group similar water bodies, will need to be developed as we did for streams and rivers. The classification of streams and rivers was based on stream and river size and temperature. Because lakes, wetlands, and streams are so different we cannot use the same classification system for all three water body types. As a result, we anticipate using two additional classification systems, one for lakes and one for wetlands.
  - a. For lakes -- We need to develop a lake classification that puts lakes into classes that will respond 'similarly' to water withdrawals.
  - b. For wetlands -- There are already a number of well known classification systems developed for wetlands. Some rely principally on vegetation type and some on hydrogeomorphological characteristics and some on a combination of factors. We are committed to using an existing wetland classification if it allows us to accurately assess the effect of water withdrawal on the functional integrity of wetlands.

### **III. MCLA 324.32803(4)(e) - Make recommendations on reconciling conflicts in state laws related to the use of the waters of the state.**

The Council has formed a subcommittee to explore this issue in greater depth. We recognized that direct conflicts for water users will be rare, but conflicting goals may occur more often. The subcommittee will work to identify those which may benefit from legislative actions or department guidance and will report in August 2009.

### **IV. MCLA 324.32803(4)(f) - Make recommendations on the development and implementation of the state's water conservation and efficiency program under section 4.2 of the [Great Lakes-St. Lawrence River Basin Water Resources Compact](#) (Compact).**

The Council has formed a subcommittee to explore this issue in greater depth. Its main task will be to reconcile the provisions in Michigan law that encourage conservation and efficiency efforts with the approach in the Compact that talks about setting goals and objectives. The regional body has done some work on establishing guidelines that will be reviewed by the subcommittee. The final report will recommend whether it is necessary to reconcile Michigan's current law with the language used in the Compact and, if so, how it should be done.

**V. MCLA 324.32803(4)(g) - Develop a framework for evaluating preventative measures designed to prevent adverse resource impacts.**

At the January 2009 meeting of the Council, a subcommittee formed to begin addressing this charge. This group will assess the use of “preventative measures” as currently authorized by statute and make recommendation on its implementation, if needed.

**VI. MCLA 324.32803(4)(h) - In consultation with academic institutions and other nonprofit organizations, make recommendations regarding educational materials related to the use and availability of water resources.**

The Council has formed a subcommittee to explore this issue in greater depth. The committee has worked closely with Michigan State University and MSU Extension, which is performing initial outreach efforts.

In initial discussions regarding educational materials related to use and availability of water resources, the workings of the assessment tool and the decision making process within the departments, the Council has identified several areas of focus as a basis for our future recommendations, based on available resources.

Many sources of educational materials already exist, including public, nonprofit, and educational institutions that address the use and availability of water resources. However, a template for these materials needs to be developed that categorizes them by water use types or sectors (i.e. agriculture, recreation, mining, home, etc.). The template would help the user more quickly find the right source of educational material that meets their specific needs.

A second focus area would be the special educational needs of the “Water User Groups” or “Water Assessment Committees” that could be formed when the Water Withdrawal Assessment Tool indicates a possible problem. Participants in these water user groups will need some special educational materials that will help them understand some of the tools and techniques that are available to them to prevent a future adverse resource impact within their designated watershed.

The Council also has discussed the idea of holding a one-day workshop to help identify and refine educational needs and recommendations.